Upside/Downside Capture Ratios and S&P 500 Sector Returns in Volatile Markets

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Purpose:

The purpose of this study is to determine if Capture Ratios can predict the future returns of S&P 500 sectors.

Research Approach:

Data Requirements:

- Monthly returns for 10 S&P 500 sectors (2007-2012)
- Monthly returns for S&P 500 (2007-2012**)**

Period of Analysis:

- Calculation Period – 2007-2010
- Forecasting Period – 2011-2012

Model Specification:

$$UCR_{st} = \frac{R_{st}}{R_{mt}} - 1 \quad \text{For } R_{st} > 0, \text{ For } R_{mt} > 0$$

$$DCR_{st} = \frac{R_{st}}{R_{mt}} - 1 \quad \text{For } R_{st} < 0, \text{ For } R_{mt} < 0$$

$$\overline{DCR_{st}} = \sum_{t=1}^{n} \frac{DCR_{st}}{n} \qquad \overline{UCR_{st}} = \sum_{t=1}^{n} \frac{UCR_{st}}{n}$$

Where:

- R_{st} = Return to sector at time t
- R_{mt}=Return to market at time t
- UCR = Upside capture ratio
- DCR = Downside capture ratio
- $\overline{UCR}$ = Average upside capture ratio
- $\overline{DCR}$ = Average Downside Capture Ratio
- $\overline{UCR}/\overline{DCR}$ = Ratio of Upside to Downside

Regression Results:

Return Period	R^2	a	b	T-stat	Independent Variable	Exclusion
12/31/10-4/30/11	0.0275	0.1062	-0.0229	-0.4753	UCR	
	0.0000	0.0752	0.0000	0.0007	UCR	HCX
	0.1283	0.0237	0.0315	0.9399	UCR	HCX, SPENS
	0.3995	0.0121	0.0455	1.8237	UCR	HCX, SPENS, SPFN
4/30/11-9/30/11	0.4673	0.0238	-0.1645	-2.6492	DCR	
9/30/11-2/28/12	0.4150	-0.0384	0.1822	2.3822	UCR	
	0.4383	-0.0943	0.2235	2.3372	UCR	HCX
1/1/11-2/28/12	0.2958	-0.1701	0.1520	1.8330	UCR/DCR	

Estimating Equations:

- $R_{st+1} = a + b*UCR_s$
- $R_{st+1} = a + b*\overline{DCR}_s$
- $R_{st+1} = a + b*(\overline{UCR}/\overline{DCR})$

Where a, b = Regression Parameters

- t+1 = 12/30/11 – 4/30/11 ($\overline{UCR}$)
- t+1 = 4/30/11 – 9/30/11 ($\overline{DCR}$)
- t+1 = 9/30/11 – 2/28/12 ($\overline{UCR}$)
- t+1 = 1/1/11 – 2/28/12 ($\overline{UCR}/\overline{DCR}$)

Sector List:

- SPCCS – Consumer Discretionary
- SPCNS – Consumer Staples
- SPENS – Energy
- SPFN – Financial
- HCX – Health Care
- SPIN – Industrials
- SPHTI – Information Technology
- SPBMS – Materials
- SPCSS – Telecommunications
- SPUT – Utilities

Conclusion:

12/31/10 – 4/30/11: Upswing Period

- R^2 is quite low and the b coefficient is statistically insignificant except for the model that excludes HCX, SPENS, and SPFN. This model is significant at the 90% confidence level and the b coefficient has the right sign.

4/30/11 – 9/30/11: Downswing Period

- R^2 is moderately low and the b coefficient is statistically significant at the 95% confidence level. The b coefficient has the right sign.

9/30/11 – 2/28/12: Upswing Period

- R^2 is moderately low and the b coefficient is statistically significant at the 95% confidence level. The b coefficient has the right sign.

1/1/11 – 2/28/12: Trading Range Period

- R^2 is low and the b coefficient is significant at the 90% confidence level. The b coefficient has the right sign.